99 B 153

4.5 PSP Cover Sheet (Attach to the front of each proposal)

Proposal Title: Merced River Corridor Restoration Project Phase III
Applicant Name: Stillwater Sciences
Mailing Address: 2532 Durant Ave, #201, Berkeley CA 94704
Telephone: (510) 848-8098
Fax: (510) 848-8398
Email: jen@stillwatersci.com

Amount of funding requested: $ 229,000 for 3 years

Indicate the Topic for which you are applying (check only one box).

- ☐ Fish Passage/Fish Screens
- ☒ Habitat Restoration
- ☐ Local Watershed Stewardship
- ☐ Water Quality
- ☐ Introduced Species
- ☐ Fish Management/Hatchery
- ☐ Environmental Education

Does the proposal address a specified Focused Action? ____ yes X no

What county or counties is the project located in? Merced County

Indicate the geographic area of your proposal (check only one box):

- ☐ Sacramento River Mainstem
- ☐ Sacramento Trib: _____
- ☐ San Joaquin River Mainstem
- ☒ San Joaquin Trib: Merced River
- ☐ Delta: _____
- ☐ East Side Trib: _____
- ☐ Suisun Marsh and Bay
- ☐ North Bay/South Bay: _____
- ☐ Landscape (entire Bay-Delta watershed)
- ☐ Other: _____

Indicate the primary species which the proposal addresses (check all that apply):

- ☒ San Joaquin and East-side Delta tributaries fall-run chinook salmon
- ☐ Winter-run chinook salmon
- ☐ Late-fall run chinook salmon
- ☐ Delta smelt
- ☒ Splittail
- ☐ Green sturgeon
- ☒ Migratory birds
- ☐ Other: _____
- ☐ Spring-run chinook salmon
- ☒ Fall-run chinook salmon
- ☐ Longfin smelt
- ☐ Steelhead trout
- ☐ Striped bass
- ☐ All chinook species
- ☐ All anadromous salmonids

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

The restoration plan developed by this project will address a necessary step to achieving the ERPP visions for the Merced River Ecological Management Unit (stream flows, coarse sediment supply, stream meander, natural floodplain and flood processes, stream temperatures, and river and riverine aquatic habitats [ERPP Vol. II, pp 422-425]).

Indicate the type of applicant (check only one box):

☐ State agency	☐ Federal agency
☐ Public/Non-profit joint venture	☐ Non-profit
☐ Local government/district	☐ Private party
☐ University	☒ Other: Private/Local Agency Joint Venture

Indicate the type of project (check only one box):

☒ Planning	☐ Implementation
☐ Monitoring	☐ Education
☐ Research	

By signing below, the applicant declares the following:

1.) The truthfulness of all representations in their proposal;

2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and

3.) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

Jennifer Vick

Printed name of applicant

Jennifer Vick

Signature of applicant

MERCED RIVER CORRIDOR RESTORATION PROJECT

PHASE III: PLAN DEVELOPMENT AND CONCEPTUAL DESIGNS

JOINT VENTURE

Company/Agency	STILLWATER SCIENCES	MERCED COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT
Address	2532 Durant Avenue, Suite 201 Berkeley, CA. 94704	2222 M Street Merced, CA. 95340
Phone	(510) 848-8098	(209) 385-7654
Fax	(510) 848-8398	(209) 726-1710
E-mail	jen@stillwatersci.com	
Contact	**Jennifer Vick**	**Bob Smith, Director**
Type of Organization/ Tax Status	Incorporated/Small Business	Local Government
Tax Identification No.	94-3241861	

SUBCONSULTANT

Company	MCBAIN AND TRUSH
Address	P.O. Box 663 Arcata, CA. 95521
Phone	(707) 826-7794
Fax	(707) 826-7795
E-mail	mcbtrsh@northcoast.com
Contact	Scott McBain
Type of Organization/ Tax Status	Partnership/Small Business
Tax Identification No.	68-0347100

Participants/Collaborators in Implementation: The Merced River Stakeholder Group and the Merced River Technical Advisory Committee (TAC) are overseeing the Project. These groups include representatives from U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), California Department of Water Resources (CDWR), Merced Irrigation District, East Merced Resource Conservation District (East Merced RCD), environmental groups, local landowners, aggregate mine operators and other business interests. In addition to coordinating through the Stakeholder Group and TAC, the Team is actively working with CDWR, CDFG, East Merced RCD, and Merced Irrigation District (MID) to ensure that our restoration planning project is well coordinated with and complementary to all studies and restoration efforts currently underway or planned by these parties in the Merced River corridor. We have also coordinated closely with MID, CDFG, USFWS, and CDWR during the preparation of this proposal. Stillwater Sciences will be the CALFED contractee and will be responsible for payments, reporting, and accounting.

I-015517

EXECUTIVE SUMMARY

PROJECT TITLE: **MERCED RIVER CORRIDOR RESTORATION PLAN PROJECT**
PHASE III: PLAN DEVELOPMENT AND CONCEPTUAL DESIGNS

APPLICANTS: **Stillwater Sciences and Merced County Planning and Community Development Department**

PROJECT DESCRIPTION, SIZE, AND LOCATION: The goal of this project is to develop a publicly supported, technically sound, and implementable restoration plan for the Merced River corridor from Crocker-Huffman Dam (RM 52) downstream to the San Joaquin River (RM 0). The plan will focus on reestablishing geomorphic and ecological functions, processes, and characteristics given current regulated flow and sediment conditions in the Merced River to reverse long-term trends of degradation and improve habitats from existing conditions. The entire project area is contained within Merced County.

The project is being implemented in three phases. In Phase I, the County is establishing a Merced River Stakeholder Group and Merced River Technical Advisory Committee (TAC). This phase is being funded by the U.S. Fish and Wildlife Service Anadromous Fish Restoration Program and was begun in November 1998. In Phase II, the Project Team will conduct baseline geomorphic and ecological analyses and identify social, infrastructural, and institutional issues and concerns that will define opportunities and constraints for restoration in the Merced River corridor. This phase is being funded by CALFED and will begin in April 1999. In Phase III, the Project Team will (1) complete field and modeling efforts to develop design criteria for geomorphically functional channel and floodplain dimensions and for riparian habitat restoration, (2) in collaboration with the Stakeholder Group and TAC, develop an overall Merced River Corridor Restoration Plan, and (3) develop conceptual designs for five top priority projects identified in the restoration plan. During this phase, the Project Team will work closely with the Stakeholder Group and TAC to develop a restoration vision for the Merced River corridor, identify and prioritize restoration actions, and develop conceptual designs and funding proposals for five of the highest priority restoration projects. Peer review of study designs and analyses and restoration and monitoring recommendations will be provided by a Scientific Advisory Team, consisting of internationally recognized experts in the fields of geomorphology, hydrology, aquatic and riparian ecology, and statistics. **This proposal seeks funding for Phase III of the project.**

PRIMARY BIOLOGICAL/ECOLOGICAL OBJECTIVES: The Merced River sediment supply, flow regime, and floodplain and channel morphology have been significantly altered, resulting in loss and degradation of habitat for native species, particularly chinook salmon. Despite general recognition of the degraded condition of the Merced River, no long-term restoration strategy has been developed for the Merced River corridor. This project will develop a long-term, large-scale program to restore critical geomorphic and ecological processes that create and maintain a healthy riverine ecosystem.

In addition to developing the fundamental scientific information and plan needed to implemented large-scale and effective restoration in the Merced River corridor, the project's baseline evaluations (Phase II) and the restoration plan (Phase III) will provide necessary information and guidance to assist the County in future planning and permitting in the Merced River corridor.

COSTS: The estimated total cost of Phase III of the project is $229,000.

ADVERSE AND THIRD PARTY IMPACTS: The Project Team is actively coordinating with the Merced River Stakeholder Group, Merced River TAC, and the public to help ensure that all potential third party impacts are identified and avoided.

APPLICANT QUALIFICATIONS: The Project Team is composed of Stillwater Sciences (the technical lead), Merced County Planning and Community Development Department (the local and public coordination lead), McBain and Trush (a technical subconsultant to the Stillwater Sciences), and a Scientific Advisory Team. This team has extensive experience in public coordination and facilitation and ecological, geomorphic, and environmental management issues in the San Joaquin Basin and are currently working together on Phases I and II to develop the Merced River Corridor Restoration Plan. Projects completed or underway by team members include long-term evaluations of chinook salmon population dynamics and factors limiting production in the Tuolumne River, geomorphic assessments of the Tuolumne and Merced rivers, development of a restoration plan and site-specific restoration projects in the Tuolumne River, and design and implementation of river-wide and site-specific monitoring in the Tuolumne River. The scientific advisory team consists of internationally recognized experts in the fields of geomorphology, hydrology, aquatic and riparian ecology, and statistics.

MONITORING AND DATA EVALUATION: The completed restoration plan will include an adaptive management framework and a detailed hypothesis-driven monitoring plan as a component of this framework. Much of the baseline monitoring data needed to implement this plan will be collected in the Phase II evaluations, which are currently funded and will be implemented in summer 1999.

LOCAL SUPPORT/COORDINATION WITH OTHER PROGRAMS: Public and stakeholder support and participation are a key component of this project and are crucial for developing an implementable restoration plan. In Phase I, the Merced County Planning and Community Development Department, with technical support from Stillwater Sciences, conducted two public outreach meetings (in December 1998 and March 1999), convened the Merced River Stakeholder Group, and is in the process of convening the Merced River TAC. Both public meetings were well attended, with more than fifty people attending each. The Merced River Stakeholder Group currently includes 21 participants from the local community who represent individual landowners and landowner coalitions, environmental groups, angling groups, aggregate mine operators, resource agencies, and others. To date, coordination with this group has been constructive and many members have expressed interest in actively contributing to the restoration plan and its supporting studies.

In addition, the Project Team is working closely with the CDFG, Merced Irrigation District and their fisheries consultant, CDWR, and the East Merced Resource Conservation District to ensure that the restoration plan and its supporting studies complement other ongoing resource management efforts. The major efforts with which we are currently coordinating include: (1) a ten-year study program currently being developed by MID and CDFG to assess chinook salmon population dynamics in the river; (2) a large-scale channel reconstruction project currently being developed and implemented by CDFG and CDWR (with funding from the Four Pumps Agreement and CALFED), (3) and the East Merced Resource Conservation District's vernal pool conservation planning effort.

COMPATIBILITY WITH CALFED OBJECTIVES: This project will develop a scientifically based and publicly supported plan for large-scale restoration of ecological processes that create and maintain habitats for natives species in the Merced River and will therefore benefit CALFED's Ecosystem Restoration Water Quality Objectives. The project will not conflict with CALFED's Water Supply Reliability or Levee System Integrity Objectives. In addition, this project is based on an ecosystem approach to river restoration which is fundamental to the objectives of the CALFED's Ecosystem Restoration Program Plan (ERPP), and the restoration plan developed by this project will address a necessary step to achieving the ERPP visions for the Merced River Ecological Management Unit (streamflows, coarse sediment supply, stream meander, natural floodplain and flood processes stream temperatures, and river and riverine aquatic habitats) (ERPP vol. II, pp. 422–425).

I. PROJECT DESCRIPTION

BACKGROUND: The Merced River corridor has been significantly altered by dam construction and operation, flow diversion, gold and aggregate mining, levee construction, and land use conversion. Physical alterations of the Merced River have eliminated or impaired fluvial processes that, under natural conditions, form and maintain riverine habitats and drive ecological processes and have blocked anadromous fish access to the upper watershed, reduced and degraded habitat for native species, and created habitat or increased habitat suitability for introduced predator fish species. In the most comprehensive assessment of the Merced River completed to date, Vick (1995) concluded that without active and large-scale restoration of channel and floodplain morphology and geomorphic processes in the river corridor, the quality of habitat available to native species (including chinook salmon) will likely continue to decline.

Flow in the river is regulated by four mainstem dams (Figure 1), which since 1926 have eliminated the coarse sediment supply from the upper watershed and reduced the 1.5-year flood magnitude by 83% (from 8,260 cfs to 1,420 cfs). In addition, gold and aggregate mining have removed stored bedload from the channel and floodplain downstream of the dams and have substantially altered channel morphology. Vick (1995) documented channel responses to these perturbations, including reduction in active channel width (averaging 85 feet, or 33% of the 1937 channel width), channel incision of up to 20 feet, elimination of channel migration and floodplain slough complexes, and creation of 5.6 miles (273 acres) of instream mining pits that occupy 33% of the historically available spawning reach.

Despite recognition of the degraded condition of the Merced River, no long-term restoration strategy has been developed for this river corridor. Individual habitat restoration and rehabilitation projects have been constructed but have lacked broader consideration of physical processes and geomorphic functions and have generally performed poorly (Kondolf et al. 1996a, 1996b). This project will apply comprehensive understanding of ecological, biological and geomorphic conditions and processes to development of a plan to restore (to the extent feasible) disturbed riverine habitats and to reestablish the fluvial processes necessary for maintaining the system in the long term.

PROJECT DESCRIPTION: The goal of this project is to develop a publicly supported, technically sound, and implementable restoration plan for the Merced River corridor from Crocker-Huffman Dam (RM 52) downstream to the San Joaquin River (RM 0). The plan will focus on reestablishing geomorphic and ecological processes that have been impaired by past and current practices to reverse historic and current trends of degradation and provide long-term, sustainable improvements in ecosystem functions and attributes. The plan is based on the model illustrated in Figure 2, in which geomorphic processes (governed primarily by sediment supply and streamflow) determine the quality, quantity, and distribution of physical habitat. The project will build on work already completed or in progress by members of the Project Team on the Merced and Tuolumne rivers (see Appendix B) and other available studies (see Appendix C).

The project is being implemented in three phases as shown in Figure 3. In Phase I, the County is establishing a Merced River Stakeholder Group and Merced River Technical Advisory Committee (TAC). This phase is being funded by the U.S. Fish and Wildlife Service Anadromous Fish Restoration Program (AFRP) and was begun in November 1998. In Phase II, the Project Team will conduct baseline geomorphic and ecological analyses and identifying social, infrastructural, and institutional issues and concerns that will define opportunities and constraints for restoration in the Merced River corridor. This phase is being funded by CALFED and will begin in April 1999. In Phase III, the Project Team will (1) complete field and modeling efforts to develop design guidelines for geomorphically functional channel

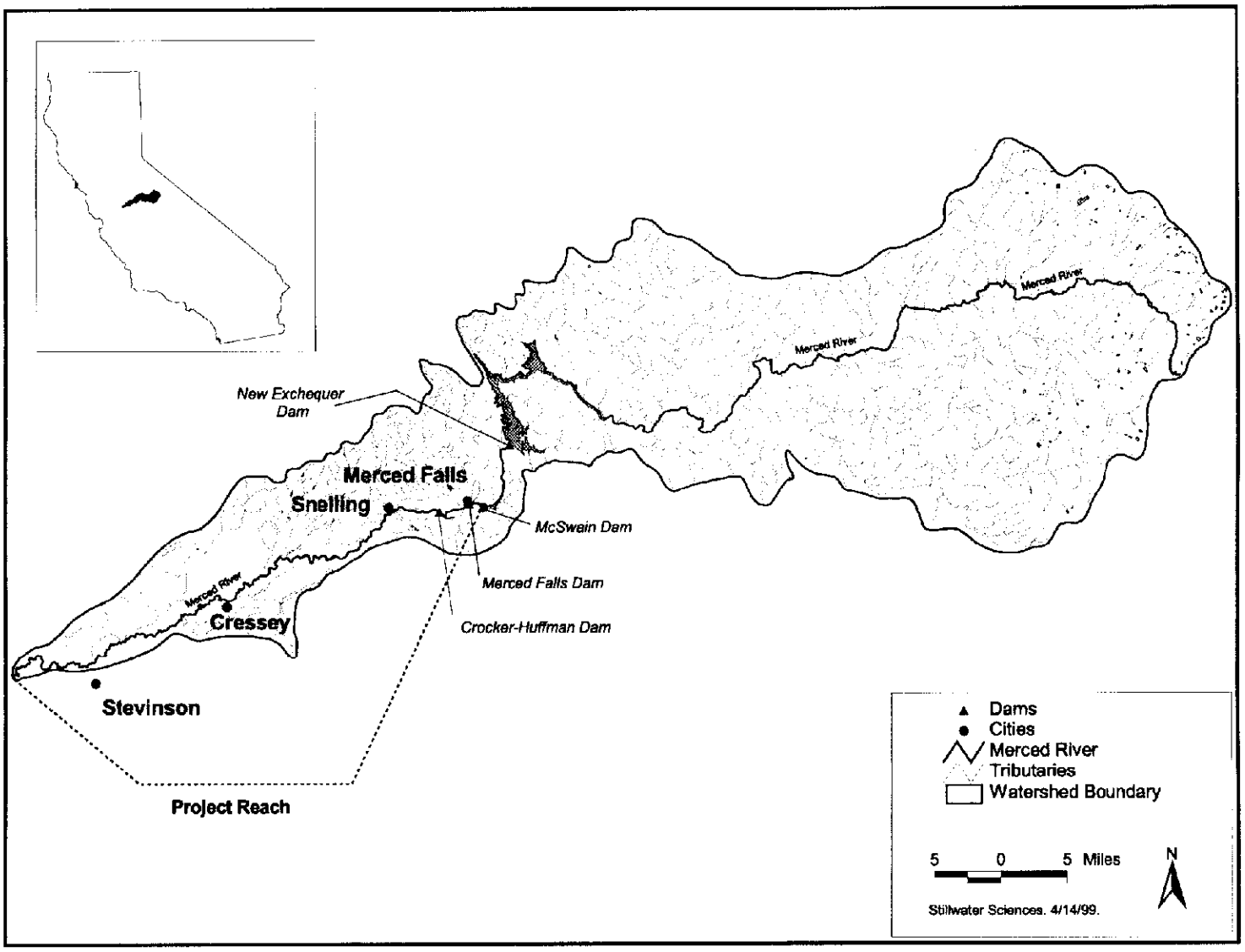

Figure 1. Merced River Watershed

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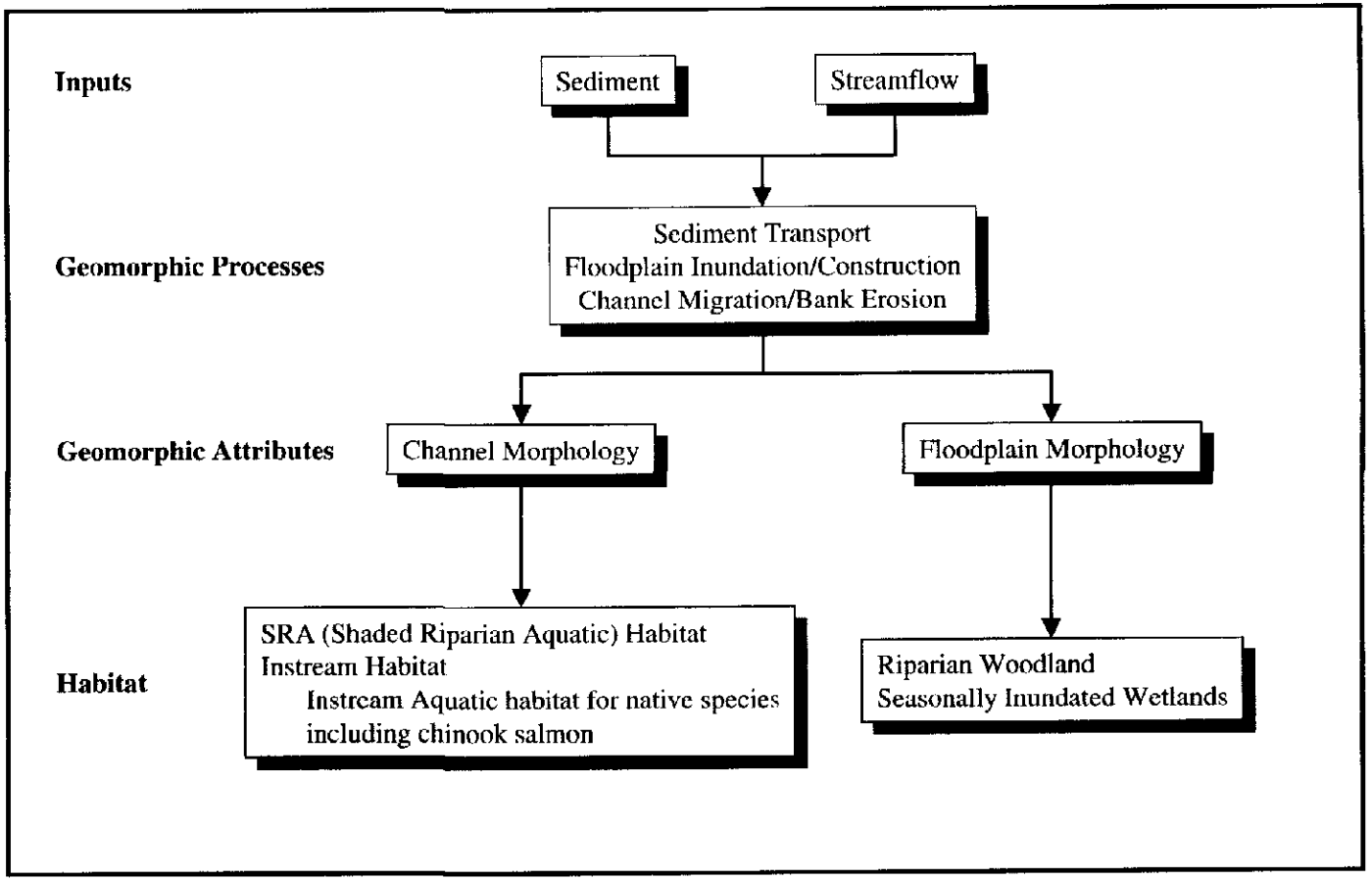

Figure 2. Conceptual Model of the Ecosystem-based Study Approach

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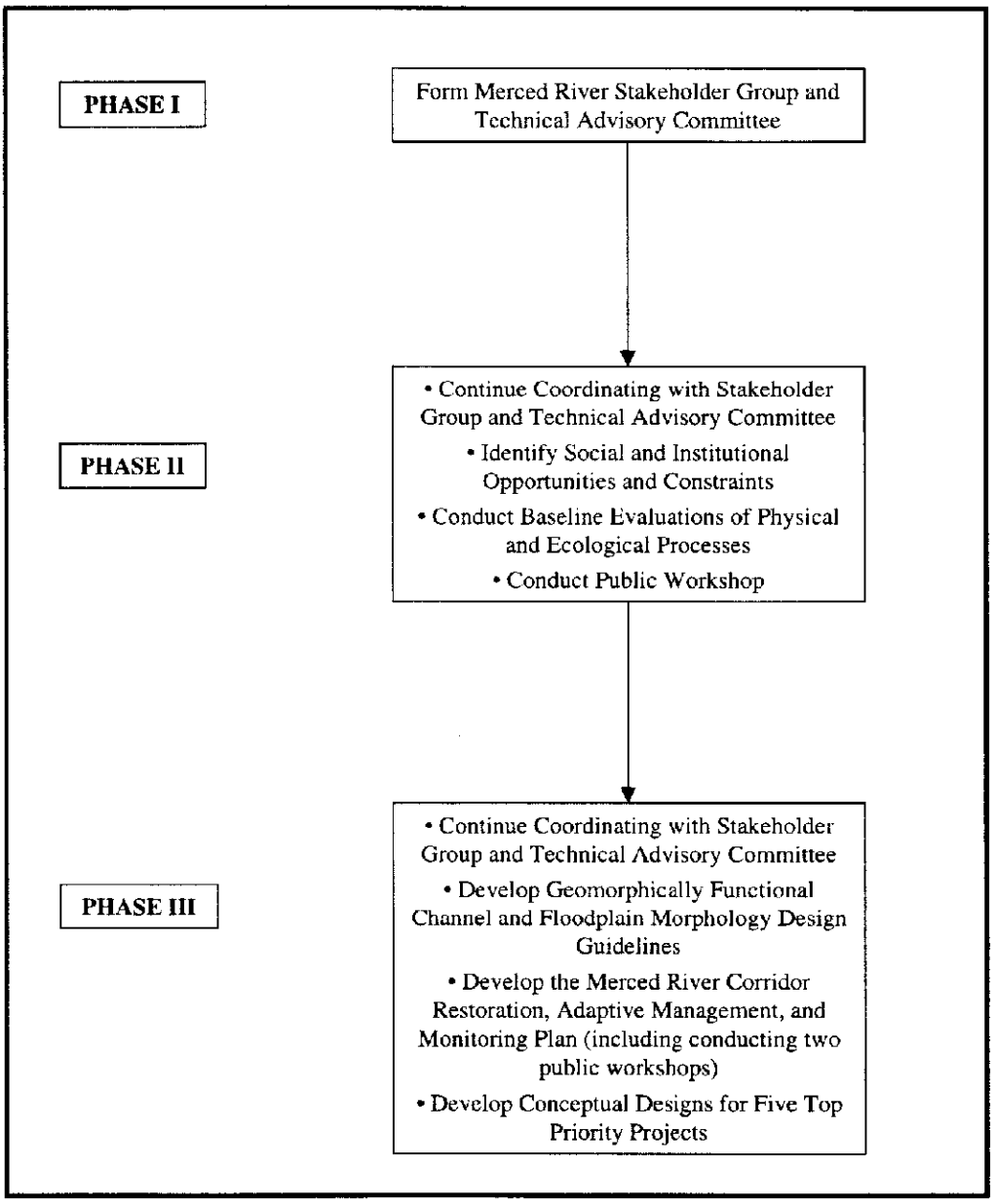

Figure 3. Merced River Restoration Project Phases

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and floodplain dimensions[1], (2) in collaboration with the Stakeholder Group and TAC, develop an overall Merced River Corridor Restoration Plan, and (3) develop conceptual designs for five top priority projects identified in the restoration plan. Formulation of the restoration plan will include the following steps: (1) with the Stakeholder Group and TAC, define and describe the restoration vision; (2) develop broad-scale conceptual restoration alternatives to achieve this vision and identify a preferred conceptual alternative; (3) develop restoration recommendations and identify and prioritize projects to achieve the selected conceptual alternative; (4) develop the adaptive management and monitoring plan; and (5) develop conceptual designs for five top priority projects identify by the restoration plan. During this phase, the Project Team will work closely with the Stakeholder Group and TAC to develop a restoration vision for the Merced River corridor, identify and prioritize restoration actions, and develop plans for five of the highest priority restoration projects and will conduct two public workshops to receive broader public input during the plan formulation process. Potential restoration actions may include (but are not limited to) channel and floodplain reconstruction, coarse sediment (spawning gravel) augmentation, and preservation and restoration of key riparian sites. Peer review of study designs and analyses and restoration and monitoring recommendations are being provided by a Scientific Advisory Team, consisting of internationally recognized experts in the fields of geomorphology, hydrology, aquatic and riparian ecology, and statistics. **This proposal seeks funding for Phase III of the project.**

SCOPE OF WORK:

Task 1: Coordinate with the Merced River Stakeholder Group and Technical Advisory Committee. The Project Team will continue to coordinate with the Stakeholder Group and the Technical Advisory Committee via regularly scheduled, milestone-oriented meetings.

Task 2: Develop Geomorphically Functional Channel and Floodplain Morphology Design Guidelines. At nearly all locations on the lower Merced River, the channel morphology has not equilibrated to flow- or land use-induced disturbances and is unlikely to do so under current sediment supply and flow conditions. Reconstructing channel and floodplain morphology in many locations is therefore required to restore a geomorphically functional riverine system. The Project Team will develop target dimensions for a geomorphically functional channel and floodplain morphology in the gravel-bedded reach, using a set of model reaches and the anticipated high-flow regime. Reference reaches will be identified based on coarse sediment assessment and channel surveys completed in Phase II. This task includes the following subtasks:

2.1 Identify natural model reaches that may be used for channel and floodplain design consideration
2.2 Identify bed mobilization thresholds in natural/model reaches
2.3 Develop channel and floodplain design criteria and riparian habitat restoration
2.4 Prepare draft and final technical memorandum for inclusion in final restoration plan

Task 3: Develop the Merced River Corridor Restoration and Monitoring Plan. Based on input from the Stakeholder Group and TAC and the results of the baseline evaluations completed in Phase II and Phase III Task 2, the Project Team will develop an overall restoration strategy. A range of alternative strategies will be explored in developing the final strategy, which will incorporate a vision statement for the corridor developed through public and agency consultation as well as specific restoration goals and objectives. Specific restoration actions will be identified, with consideration given to magnitude of the potential benefits, presence of cooperative landowners, and consistency with existing plans and

[1] This task was originally included in Phase II. Phase II, however, was only partially funded in the 1998 CALFED cycle. This Task was shifted to Phase III due to funding constraints.

regulations. This plan will include a sediment management strategy. This task includes the following subtasks:

- 3.1 Develop statement of restoration vision, goals, and objectives
- 3.2 Develop broad-scale conceptual alternatives to achieve vision
- 3.3 Conduct public workshop to present alternatives
- 3.4 Select alternative to develop in more detail
- 3.5 Identify and prioritize projects to achieve selected vision alternative
- 3.6 Develop an adaptive management and monitoring plan
- 3.7 Prepare draft restoration plan (which will include a sediment management plan and adaptive management and monitoring plan)
- 3.8 Conduct public workshop to present draft plan
- 3.9 Prepare final restoration plan

Task 4: Develop Conceptual Designs for Five Top Priority Projects. Based on the findings of the technical analyses and the final restoration and monitoring plan, the Project Team will develop conceptual designs for the five top priority projects. Conceptual designs will be of sufficient technical detail to initiate the engineering-level construction designs. For example, for a channel reconstruction project, the conceptual design would include channel and floodplain planform alignment, typical cross sections showing channel and floodplain dimensions, a schematic revegetation plan, engineering cost estimates, a monitoring framework, and monitoring cost estimates. These designs can be used by the stakeholder group to readily develop project funding proposals for rapid project implementation.

Task 5: Project Management. Stillwater Sciences will be the CALFED contractee and will be responsible for payments, reporting, and accounting. This task will include contract preparation and management, budget management and accounting, and preparation of quarterly reports.

SEPARABILITY OF TASKS: The tasks described in this scope of work could be separated as follows and implemented independently: [Tasks 2 and 5], [Tasks 1, 3, and 5], [Task 4 and 5]. Note that Task 2 must be completed before Tasks 4 and 5 can proceed. Also, if project components were funded separately, the cost of Task 5 would scaled to reflect project management requirements for the funded task. For this proposal, we targeted project management to be five percent of the task budget.

PROJECT LOCATION AND GEOGRAPHIC BOUNDARIES: The Merced River Corridor Restoration Plan will focus primarily on the 52-mile reach of the Merced River and its floodplain from Crocker-Huffman Dam to the San Joaquin River confluence (Figure 1). Aerial photography, channel mapping, and vegetation mapping completed in Phase II, however, will extend upstream to Merced County's eastern boundary (RM 55.5). The entire project area is within Merced County and within the Merced River watershed.

II. ECOLOGICAL/BIOLOGICAL BENEFITS

ECOLOGICAL/BIOLOGICAL OBJECTIVES: The objective of this project is to develop a scientifically based, publicly supported plan for large-scale, long-term restoration of the ecosystem processes and attributes in the Merced River (downstream of Crocker-Huffman Dam) and its associated riparian/floodplain corridor and to provide conceptual designs for the five top priority projects. Funding for implementation of the restoration actions identified by the plan will be sought through future public and/or private sources and is not included in this proposal.

Implementation of the restoration plan will directly benefit instream aquatic habitat, shaded riparian habitat, seasonally inundated floodplain habitat, and riparian habitat, as well as enhance physical

and biological interactions between these habitats. Implementation will also benefit San Joaquin fall-run chinook salmon (a CALFED priority species), migratory birds (a CALFED second priority species), and numerous other native species, including several endangered or sensitive species. Because the plan and project designs will be based on a comprehensive understanding of geomorphic and ecological process in the corridor, the benefits derived from project implementation can be expected to be sustained far into the future.

LINKAGES:

Linkages to Past, Current, and Future Projects – This project is the third phase of a three-phased restoration planning project. Phase I was funded by the U.S. Fish and Wildlife Service Anadromous Fish Restoration Program and established a Merced River Stakeholder Group and TAC. Phase II was funded by CALFED and includes working with the Stakeholder Group and TAC to complete baseline geomorphic and ecological analyses and identify social, infrastructural, and institutional issues and concerns that will define opportunities and constraints for restoration in the Merced River corridor. This phase will be completed in September 2000. The Project Team is currently working to finalize its CALFED contracts for Phase II. Phase III will carry forward work completed in Phases I and II to develop a comprehensive restoration plan for the 52-mile Merced River corridor.

This project is also being coordinated with other restoration and evaluation efforts currently underway in the watershed including: (1) a ten-year study program currently being developed by MID and CDFG to assess chinook salmon population dynamics in the river; (2) a large-scale channel reconstruction project currently being developed and implemented by CDFG and CDWR (with funding from the Four Pumps Agreement and CALFED), (3) and the East Merced Resource Conservation District's vernal pool conservation planning effort.

Linkages to Local Regulatory and Planning Processes – The Merced County Planning and Community Development Department regulates aggregate mining in the Merced River and maintains the County General Plan, which defines County land use and resource management policies. The General Plan directs the County to protect, enhance, and restore wetland and riparian areas which provide habitat to rare and endangered species and to ensure that the County's mineral resources are utilized in a way that does not compromise County open space and habitat resources. The project's baseline evaluations and the restoration plan will provide necessary information and guidance to assist the County in future planning and permitting in the Merced River Corridor to minimize impacts of mineral resource development and for pursuing funding to implement specific restoration measures.

Linkages to ERPP Goals and Objectives – The CALFED Ecological Restoration Program Plan (ERPP) vision for the Merced River Ecological Management Unit of the East San Joaquin Basin Management Zone includes "restoring streamflow, coarse sediment recruitment, and stream channel and riparian habitat to improve habitat for fall-run chinook salmon, late-fall-run chinook salmon, steelhead, riparian vegetation, and wildlife resources" and "restoring important ecological functions and processes that will improve habitat for fall-run chinook salmon, late-fall run chinook salmon, steelhead, native amphibians and reptiles, riparian vegetation and wildlife resources" (ERPP vol. II, p. 422). Important measures identified by the ERPP to achieve this vision include restoring more natural channel configurations; restoring gravel recruitment, transport, and cleansing processes; restoring a balanced fine sediment budget by implementing improved land use and livestock grazing practices; reducing non-native fish habitat; reducing loss of young salmon at water diversions; reducing the number of adult salmon straying into non-suitable habitats; and reducing illegal harvest.

The plan developed in Phase III of this project will use the results of hydrologic, hydraulic, sediment supply and transport, and floodplain and riparian habitat baseline evaluations (conducted in Phase II) as well as additional field evaluation and modeling of reference sites (conducted in Phase III) to

develop restoration measures that will result in reestablishment of a functioning riverine ecosystem. Components of a functional system identified in the ERPP that will be specifically addressed by the plan include:

- *functional channel and floodplain configuration* - The plan will develop design criteria for geomorphically functional channel and floodplain dimensions, identify and prioritize reaches where channel reconstruction will be necessary to establish a functional channel dimension, and develop conceptual designs for five top priority projects (which may include channel reconstruction, primarily in the mined reaches).
- *restoring gravel recruitment, transport, and cleansing processes* - The plan will identify bed mobility thresholds under current and design conditions; develop a coarse sediment management plan that identifies appropriate locations, volumes, and timing for coarse sediment introduction; develop recommendations to promote frequent bed mobilization; and develop a bed mobility and substrate quality monitoring program.
- *reducing non-native fish habitat* - Reconstruction of mined reaches to provide a functional channel dimension (discussed above) is a likely component of the final plan and is expected to reduce habitat suitability for largemouth bass, a non-native species that preys on juvenile salmon;
- *riparian and floodplain habitats* - Phase II of the project includes mapping of existing native and exotic riparian and wetland vegetation throughout the river corridor and identification of relationships between distribution of the functional riparian stands and current geomorphic and hydrologic conditions. Phase III will identify riparian and floodplain habitat preservation and restoration priorities and develop conceptual designs for five top priority projects (some of which will likely include riparian and floodplain habitats).
- *meander belt width and floodplain connectivity* - The plan will develop recommendations for the minimum width(s) of a geomorphically functional meander belt, determine suitable floodplain widths to convey high flows and support riparian and floodplain habitat, and identify locations where the floodplain is confined to narrower than this width and potential locations or measures for increasing floodway width.

Linkage to AFRP Goals and Objectives – The plan will address the following action and evaluation items identified in the Revised Draft Restoration Plan for the Anadromous Fish Restoration Program: (1) improve watershed management to restore and protect instream and riparian habitat, including consideration of restoring and replenishing spawning gravel (Action Item 3), and (2) evaluate and implement actions to reduce predation on juvenile chinook salmon, including actions to isolate ponded sections of the river (Evaluation Item 3).

SYSTEM-WIDE ECOSYSTEM BENEFITS: Completion of the Merced River Corridor Restoration Plan and subsequent implementation of restoration projects identified by the plan will provide ecosystem benefits throughout the Merced River corridor. These benefits in combination with terrestrial and vernal pool conservation efforts underway by the East Merced RCD as well as large-scale restoration efforts currently underway in the Tuolumne River (by the CDFG, National Resources Conservation Service, and Tuolumne River TAC), on the Stanislaus River (by the CDFG and USFWS), and on the Merced River (by the CDFG and CDWR) will provide a substantial opportunity to improve geomorphic processes and ecological conditions in the San Joaquin Basin.

COMPATIBILITY WITH NON-ECOSYSTEM OBJECTIVES: The project does not conflict with CALFED's non-ecosystem objectives.

III. TECHNICAL FEASIBILITY AND TIMING

Coordination with the Merced River Stakeholder Group and TAC throughout Phases II and III of the project are intended to identify and address public, stakeholder, and agency concerns early in the project process and foster a public and stakeholder sense of ownership of the final plan. Recognizing and addressing public and stakeholder issues and concerns early in the process will help to ensure feasibility of the alternatives to be considered and implementability of restoration recommendations. Also, this effort is specifically designed to be coordinated with ongoing and planned restoration activities being conducted by CDFG and CDWR in the Merced River corridor.

No CEQA/NEPA or other environmental compliance documents are required for the completion of Phase III of this project. All permits would be acquired and NEPA/CEQA processes would be completed during restoration project implementation. Project implementation is not included in this proposal.

The timing of Phase III is crucial to maintain the momentum of the restoration planning project and its public participation and outreach components. Currently Phase II is expected to be completed by September 2000. Funding of Phase III Task 2 in the April 1999 cycle would allow reference site modeling to be conducted concurrently with the Phase II field work and data analysis, thereby improving efficiency and reducing costs to complete field work and expediting the completion of all technical studies needed to develop the restoration plan. In our 1998 CALFED proposal, this task was included in Phase II. However, Phase II was only partially funded in the 1998 CALFED cycle. This task, therefore, was shifted to Phase III due to funding constraints. Funding of the remainder of Phase III (Tasks 1 and 3–5) in the October 1999 funding cycle would allow the planning and synthesis components of the project to proceed immediately following the completion of technical studies.

IV. MONITORING AND DATA COLLECTION METHODOLOGY

An adaptive management framework and monitoring plan will be included in the Merced River Corridor Restoration Plan developed by this project. Because restoration actions are not yet being proposed, it is not appropriate at this time to identify specific monitoring actions in this proposal.

The final restoration plan will include *river-wide* and *project-specific* monitoring programs to evaluate the effectiveness of the restoration actions. The river-wide monitoring component will assess large-scale processes, characteristics, and trends, providing information necessary to evaluate the effectiveness of restoration measures and to adapt the river corridor management strategy to ensure the plan meets project goals. The site-specific monitoring component will evaluate the success of specific restoration projects and will be an integral part of each project. Site-specific monitoring differs from river-wide monitoring primarily in the spatial scale of the assessment. The river-wide component will assess geomorphic and ecological processes and responses to restoration measures at the scale of the entire river corridor or reach, while the site-specific component will assess similar questions within the spatial boundaries of a specific restoration project. These components will be integrated (i.e., some site-specific monitoring will be used in the river-wide monitoring) to provide cost-effective but comprehensive monitoring. The restoration plan will specifically identify the following: hypotheses to be tested; parameters to be monitored; sampling methods and field procedures to be utilized; data evaluation approaches, including data analysis methods and models to be utilized; and quality assurance/quality control measures.

The Project Team is experienced in developing focused, cost-effective and scientifically sound monitoring programs for stream restoration projects, integrated natural resource management plans, and multi-species habitat conservation plans. Stillwater Sciences and McBain and Trush are currently working with the Tuolumne River TAC and AFRP to develop and implement long-term and project-

specific monitoring on the Tuolumne River.

V. LOCAL INVOLVEMENT

Public and stakeholder support and participation are an important component of this project and are crucial for developing an implementable restoration plan. All phases of the project include an active public outreach and stakeholder coordination component, which will be achieved through public workshops and coordination with the Merced River Stakeholder Group and Technical Advisory Committee. Important points of public outreach and local involvement are shown in Figure 3.

During Phase I of the project, which is funded by the AFRP, the Merced County Planning and Community Development Department, with technical and support from Stillwater Sciences, conducted two public outreach meetings (in December 1998 and March 1999), convened the Merced River Stakeholder Group, and is in the process of convening the Merced River Technical Advisory Committee. The Stakeholder Group represents local landowners, businesses, and environmental groups, as well as state, federal, and local agencies and provides input to the Project Team and Technical Advisory Committee regarding stakeholder goals and concerns related to existing conditions and development of a restoration plan during Phases II and III of the project. One of the first tasks undertaken by the Stakeholder Group was to identify appropriate participants in the TAC. The TAC consists technical experts in the fields of geology, biology, ecology, and engineering that are directly involved in planning and implementation of restoration projects on the Merced River or managing the physical and biological resources of the Merced River. The TAC will facilitate communication between the various agencies and districts and provide technical input to and review of technical study objectives, methods, and results during Phases II and III of the project. These groups meet regularly at project milestones to review information provided by the Project Team and to provide input and guidance on future tasks. The first meeting of the TAC is planned for May 1999. At the request of the Stakeholder Group, the TAC meetings will also be open to the public.

The public meetings held to date were well attended, with more than fifty people attending each, and response from the public has been very constructive, including many people volunteering to contribute their time to the project and allow field trips and field work on their property. The Merced River Stakeholder Group currently includes 21 participants from the local community who represent individual landowners and landowner coalitions, environmental groups, angling groups, aggregate mine operators, resource agencies, and others. Participants in the Stakeholder Group are shown in Appendix D. Proposed and confirmed TAC participants and their affiliations and expertise are shown in Appendix D.

In addition to coordinating with the Stakeholder Group and TAC, the Project Team is working closely with the CDFG, Merced Irrigation District and their fisheries consultant, CDWR, and the East Merced Resource Conservation District to ensure that the restoration plan and its supporting studies complement other ongoing resource management efforts. The major efforts with which we are currently coordinating include: (1) a ten-year study program currently being developed by MID and CDFG to assess chinook salmon population dynamics in the river; (2) a large-scale channel reconstruction project currently being developed and implemented by CDFG and CDWR (with funding from the Four Pumps Agreement and CALFED), (3) and the East Merced Resource Conservation District's vernal pool conservation planning effort.

VI. COST

BUDGET: The estimated total cost of Phase III of the project is $260,351. The project budget is provided in Table 1. The quarterly budget is provided in Table 2.

Stillwater Sciences' overhead costs include costs associated with general office requirements

TABLE 1. Total Budget

PROJECT TASK	DIRECT LABOR HOURS	DIRECT SALARY & BENEFITS	OVERHEAD LABOR	SERVICE CONTRACTS	MATERIALS & ACQUISITION	MISC. & OTHER DIRECT COSTS	TOTAL COST
1. Coordinate with the Merced River Stakeholder Group and Technical Advisory Committee	220	$7,336	$10,724	$13,790	$0	$875	$32,727
2. Identify and Predict Geomorphically Functional Channel and Floodplain Morphology							
2.1 Identify natural model reaches that may be used for channel and floodplain design consideration	88	*$2,582*	*$3,774*	*$7,650*	*$0*	*$671*	*$14,677*
2.2 Identify bed mobilization thresholds in natural/model reaches	347	*$10,061*	*$14,704*	*$15,924*	*$0*	*$2,768*	*$43,456*
2.3 Develop channel and floodplain design criteria	44	*$1,577*	*$2,305*	*$4,000*	*$0*	*$0*	*$7,882*
2.4 Report preparation	72	*$2,564*	*$3,748*	*$3,740*	*$0*	*$200*	*$10,252*
subtotal	551	$16,785	$24,530	$31,314	$0	$3,639	$76,268
3. Develop Restoration and Monitoring Plan							
3.1 Develop statement of restoration vision, goals, and objectives	20	*$764*	*$1,116*	*$1,280*	*$0*	*$0*	*$3,160*
3.2 Develop conceptual alternatives	56	*$1,870*	*$2,733*	*$3,760*	*$0*	*$0*	*$8,362*
3.3 Conduct public workshop to present alternatives	37	*$1,350*	*$1,973*	*$3,372*	*$0*	*$253*	*$6,947*
3.4 Select alternative to develop in more detail	12	*$476*	*$695*	*$800*	*$0*	*$0*	*$1,971*
3.5 Identify and prioritize projects to achieve selected alternative	48	*$1,815*	*$2,653*	*$3,360*	*$0*	*$0*	*$7,828*
3.6 Develop adaptive management and monitoring plan	144	*$5,199*	*$7,598*	*$5,840*	*$0*	*$0*	*$18,637*
3.7 Prepare draft plan	144	*$4,742*	*$6,931*	*$7,690*	*$0*	*$2,500*	*$21,863*
3.8 Conduct public workshop to present draft plan	29	*$1,031*	*$1,507*	*$3,152*	*$0*	*$253*	*$5,943*
3.9 Prepare final plan	70	*$2,397*	*$3,503*	*$4,740*	*$0*	*$6,000*	*$16,639*
3.10 Scientific Advisory Team review	0	*$0*	*$0*	*$5,000*	*$0*	*$0*	*$5,000*
subtotal	560	$19,643	$28,708	$38,994	$0	$9,005	$96,350
4. Develop Five Conceptual Designs	140	$8,410	$7,907	$15,000	$0	$0	$31,317
5. Project Management	180	$6,699	$9,790	$7,200	$0	$0	$23,689
TOTAL	1,651	$55,875	$81,660	$109,298	$0	$13,519	$260,351

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TABLE 2. Quarterly Budget

PROJECT TASK	1999		2000				2001				2002		TOTAL
	July - Sept	Oct - Dec	Jan - Mar	April - June	July - Sept	Oct - Dec	Jan - Mar	April - June	July - Sept	Oct - Dec	Jan - Mar	April - June	
1. Coordinate with the Merced River Stakeholder Group and Technical Advisory Committee					$3,273	$4,909	$4,909	$4,909	$4,909	$4,909	$4,909		$32,727
2. Identify and Predict Geomorphically Functional Channel and Floodplain Morphology	$33,008	$16,504	$23,373	$3,383									$76,268
3. Develop Restoration and Monitoring Plan					$8,079	$24,087	$24,087	$24,087	$16,058				$96,358
4. Develop Five Conceptual Designs									$8,959	$10,439	$10,439	$3,480	$31,317
5. Project Management	$3,304	$1,652	$2,340	$339	$1,131	$2,902	$2,902	$2,902	$2,795	$1,536	$1,536	$348	$23,589
TOTAL	$36,312	$18,156	$25,712	$3,722	$12,483	$31,899	$31,899	$31,898	$30,722	$16,884	$16,884	$3,828	$260,351

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(e.g., rent; computer hardware, software, and usage; corporate insurance; field and laboratory equipment; utilities, furniture, and supplies) as well as unbillable labor of support staff. We compute our direct costs and overhead based on our hourly billing rates as follows: direct salary, 33%; benefits, 7%; overhead, 60%.

The project will be implemented as a joint venture between Stillwater Sciences and the Merced County Planning and Community Development Department. Stillwater Sciences will be the CALFED contractee and project manager and will be responsible for payments, reporting, and accounting.

SCHEDULE: The project schedule indicating milestones and anticipated start and completion dates is shown in Figure 4. Anticipated time to complete Phase III is 34 months.

Task 2 of Phase III could continue as soon as funding is provided and can be dovetailed with field surveys being conducted for Phase II. Tasks 1, 3, and 4 would begin after Phase II is completed in September 2000.

Payment shall be in arrears on a monthly basis. Stillwater Sciences will invoice on a monthly basis, according to percentage of work completed by task.

VII. COST-SHARING

Implementation of Phase III of this project is not contingent upon receipt of cost-sharing funds from other sources.

Phase I of this project is currently funded by the AFRP. Phase II is funded by CALFED. Merced Irrigation District is also contributing in-kind services to both of these phases in the form of active participation in the Stakeholder Group and TAC and contribution to Stakeholder Group and TAC planning efforts.

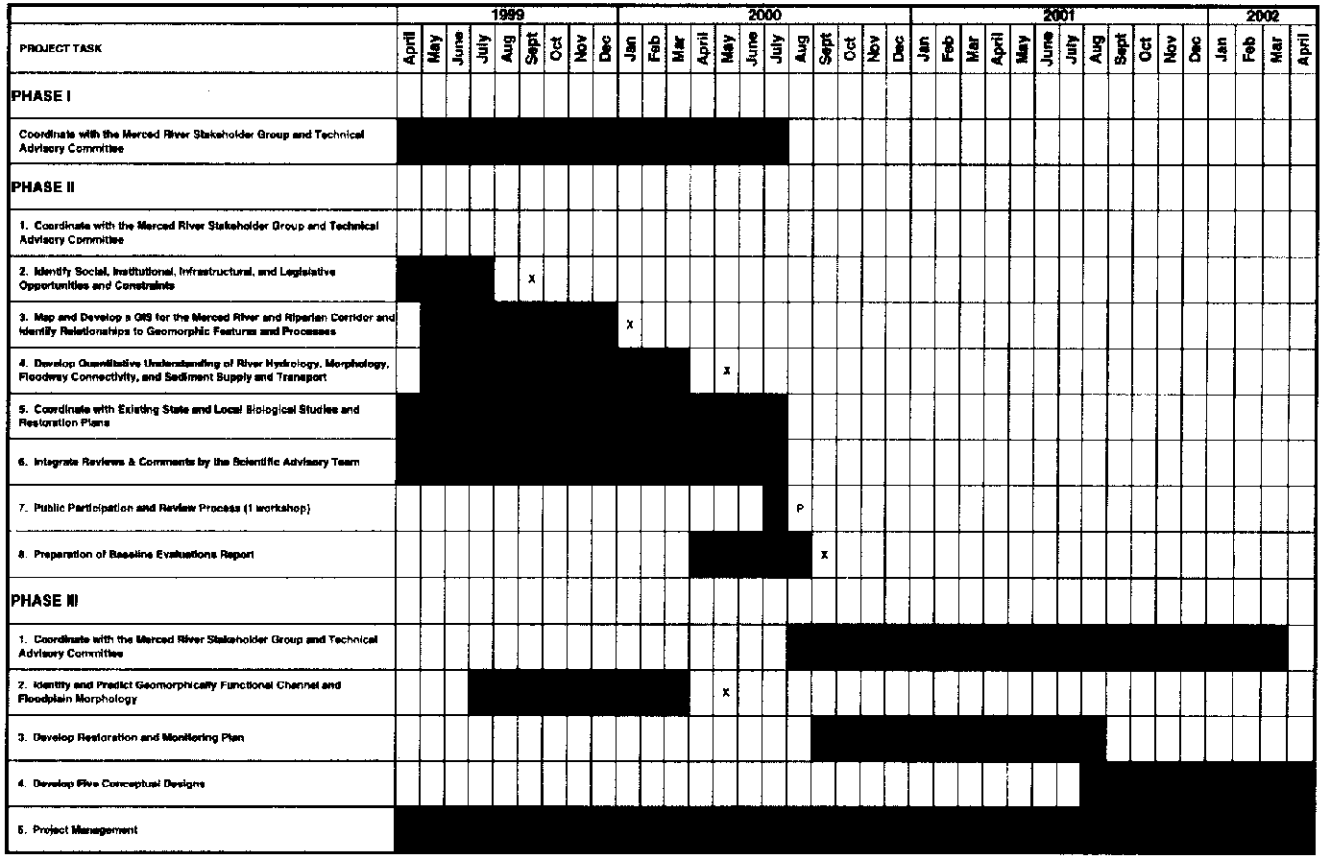
VIII. APPLICANT QUALIFICATIONS

PROJECT TEAM STRUCTURE: The Project Team consists of Stillwater Sciences, Merced County Planning and Community Development Department, McBain and Trush, and a Scientific Advisory Team. The County will act as the local lead and will coordinate the Stakeholder Group and Technical Advisory Committee, conduct public outreach, hold public workshops, and review and contribute to the restoration plan document. Stillwater Sciences, with their subconsultant McBain and Trush, will implement all technical evaluations and produce the draft and final restoration plan (with review and input from the County). The scientific advisory team, which consists of internationally recognized experts in the fields of geomorphology, hydrology, aquatic and riparian ecology, and statistics will provide input to study design, data analysis, and development of the restoration strategy. As during Phase II, Stillwater Sciences will be the CALFED contractee and project manager and will be responsible for payments, reporting, and accounting.

The lead management team will consist of Robert Smith (Merced County), Frank Ligon (Stillwater Sciences), Jennifer Vick (Stillwater Sciences), and Scott McBain (McBain and Trush). The team leaders will be supported by experienced staff members, all of whom have extensive experience in the San Joaquin Basin. Projects completed or underway by team members include a ten-year analysis of chinook salmon population dynamics and factors limiting production in the Tuolumne River; assessment of geomorphic conditions in the Merced River; a large-scale, process-based restoration plan for the Tuolumne River; planning and design for site-specific restoration projects on the Tuolumne and Merced rivers; and monitoring and evaluation of implemented restoration projects on the Tuolumne, Stanislaus, and Merced rivers (see Appendix B). (Resumes of team leaders and staff can be provided upon request.)

MERCED COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT: The Merced County

Figure 4. Project schedule



X = deliverable
P = public workshop

Planning and Community Development Department (the County) advises the County Planning Commission and Board of Supervisors on a wide range of development and resource management issues affecting unincorporated areas of Merced County and maintains the County General Plan. The County has extensive experience in facilitating a wide range of groups and committees, including facilitating input from local and state agencies, interest groups, and local municipal advisory councils to development proposals to ensure that the needs of these widely ranging interests are considered; facilitating a school mitigation fee agreement for legislative acts which affect the adequacy of school facilities; and facilitating agreements between the County and the unincorporated cities for annexations.
Robert Smith: Mr. Smith has been the Planning and Community Development Director for Merced County since 1986. Prior to joining Merced County, Mr. Smith was the Planning and Community Development Director for the City of Ceres. He received his undergraduate degree in City and Regional Planning from California Polytechnic State University. He has been involved in a wide range of development issues at both municipal and regional levels and has had extensive experience working with local agencies, such as the Merced Irrigation District, and local landowners on a variety of development, water, and land use issues.

STILLWATER SCIENCES: Stillwater Sciences is a firm of biological, ecological, and geological scientists. The company specializes in developing new scientific approaches and technologies for problem-solving in aquatic and terrestrial systems and has extensive experience and in-house ability in GIS applications to environmental analyses. Its founding members have over fifty years of experience in freshwater ecology, fisheries and wildlife biology, riparian and wetland ecology, entomology, botany, and hillslope and fluvial geomorphology. Recent projects include impact assessment and restoration of rivers affected by hydroelectric dams, timber harvest, and irrigation in California and the Pacific Northwest.
Frank Ligon: Mr. Ligon is an aquatic ecologist and geomorphologist specializing in investigations of the role of fluvial processes and morphology in the ecology of stream fish, invertebrates, and plant communities. He has successfully managed several complex, long-term projects involving watershed analysis, salmon ecology and restoration, geomorphology and riverine ecosystem restoration. His Central Valley experience includes managing a ten-year chinook salmon ecology and restoration project on the Tuolumne River below New Don Pedro Dam.
Jennifer Vick: Ms. Vick is an aquatic ecologist and geomorphologist. Her experience ranges from assessing microhabitat partitioning of fishes to evaluating geomorphic and hydrologic impacts of dams. She conducted her research for her masters thesis on the Merced River, including extensive field surveys and coordination with state and local agencies, MID, and local landowners in the Merced River corridor.

MCBAIN AND TRUSH: McBain and Trush is a professional consulting partnership applying fluvial geomorphic and ecological research to river preservation, management, and restoration. Their primary goals are maintaining or attaining river ecosystem health in regulated rivers, nationally and internationally; assessing impacts of land use activities on stream ecosystems; and recommending management strategies to minimize or eliminate negative impacts to those ecosystems. McBain and Trush has considerable experience in river corridor restoration, including: Mono Basin Stream Restoration Work Plan, Maintenance Flow Study on the Trinity River, and the Tuolumne River Corridor Restoration Plan.
William Trush: Dr. Trush is a geomorphologist and ecologist specializing in anadromous fish ecology, anadromous fish interactions with fluvial geomorphology and hydrology, channel maintenance flows, riparian ecology, macrobenthic invertebrate ecology, and stream restoration. In addition to his work with McBain and Trush, Dr. Trush is an adjunct professor in the Humboldt State University Fisheries Department, where he teaches stream ecology and coastal stream management, and is Director of the Humboldt State University Institute for River Ecosystems.
Scott McBain: Mr. McBain is an assistant hydraulic engineer/fluvial geomorphologist whose interests

include bed mobility, bedload transport, effects of high flows on channel morphology, watershed sediment yields, and stream restoration. He has worked extensively on the Tuolumne River, including the development of the Tuolumne River Corridor Restoration Plan.

SCIENTIFIC ADVISORY TEAM

The Scientific Advisory Team includes experts in the fields of fluvial geomorphology, riparian ecology, aquatic ecology, and statistics, all of whom are professors at the University of California, Berkeley (Table 3). CVs for the scientific advisory team can be provided upon request.

TABLE 3. SCIENTIFIC ADVISORY TEAM

Advisor	Field	Department
William Dietrich	fluvial geomorphology	Department of Geology and Geophysics
Richard Harris	riparian ecology	Department of Environmental Science, Policy and Management
Mary Power	aquatic ecology	Department of Integrative Biology
Terrence Speed	statistics	Department of Statistics

IX. COMPLIANCE WITH STANDARD TERMS AND CONDITIONS

The applicants have reviewed and are able to comply with the terms and conditions set forth in Attachment D and E of the Proposal Solicitation Package. Additional forms required for submittal with this proposal are provided in Appendix E.

APPENDIX A:
REFERENCES CITED

Kondolf, G. M., J. C. Vick, and T. M. Ramirez. 1996a. Salmon spawning habitat rehabilitation in the Merced, Tuolumne, and Stanislaus rivers, California: an evaluation of project planning and performance. Water Resources Center Report No. 90. University of California, Davis.

Kondolf, G. M., J. C. Vick, and T. M. Ramirez. 1996b. Salmon spawning habitat rehabilitation on the Merced River, California: an evaluation of project planning and performance. Transactions of the American Fisheries Society 125: 899-912.

Vick, J. C. 1995. Habitat rehabilitation in the lower Merced River: a geomorphological perspective. Master's thesis. Center for Environmental Design Research Report Nos. CEDR-03-95 and CEDR-04-95. University of California, Berkeley.

APPENDIX B:
PROJECTS AND RESEARCH COMPLETED BY THE PROJECT TEAM ON THE MERCED OR TUOLUMNE RIVERS

Kondolf, G. M., J. C. Vick, and T. M. Ramirez. 1996a. Salmon spawning habitat rehabilitation in the Merced, Tuolumne, and Stanislaus rivers, California: an evaluation of project planning and performance. Water Resources Center Report No. 90. University of California, Davis.

Kondolf, G. M., J. C. Vick, and T. M. Ramirez. 1996b. Salmon spawning habitat rehabilitation on the Merced River, California: an evaluation of project planning and performance. Transactions of the American Fisheries Society 125: 899-912.

McBain and Trush, 1998. Tuolumne River Corridor Restoration Plan (DRAFT), Prepared for the Tuolumne River Technical Advisory Committee, as part of the FERC Settlement Agreement for the Don Pedro Project, FERC No. 2299, Arcata, CA.

Vick, J. C. 1995. Habitat rehabilitation in the lower Merced River: a geomorphological perspective. Master's thesis. Center for Environmental Design Research Report Nos. CEDR-03-95 and CEDR-04-95. University of California, Berkeley.

Ligon, F. K., A. L. Percival, and T. P. Speed. In press. The effects of turbidity on largemouth bass feeding rate and implications for salmon management. Submitted to Ecological Applications.

The following reports were prepared as appendices to: Don Pedro Project Fisheries Studies Report (FERC Article 39, Project No. 2299). *In* Report of Turlock Irrigation District and Modesto Irrigation District Pursuant to Article 39 of the License for the Don Pedro Project, No. 2299. EA, Lafayette, California.

Appendix 1: San Joaquin River system chinook salmon population model documentation and validation. 1991.
Appendix 2: Stock-recruitment analysis of the population dynamics of San Joaquin River system chinook salmon. 1992.
Appendix 3: Tuolumne River salmon spawning surveys 1971-1988. 1991.
Appendix 5: Analysis of 1981 lower Tuolumne River IFIM data. 1991.
Appendix 6: Lower Tuolumne River spawning gravel availability and superimposition. 1992.
Appendix 7: Lower Tuolumne River chinook salmon redd excavation report. 1991.
Appendix 8: Lower Tuolumne River spawning gravel studies report. 1991.
Appendix 9: Spawning gravel cleaning methodologies. 1991.
Appendix 10: 1987 Juvenile chinook salmon mark-recapture study. 1991.
Appendix 11: An evaluation of the effect of gravel ripping on redd distribution in the lower Tuolumne River. 1991.
Appendix 12: Data reports: seining of juvenile chinook salmon in the Tuolumne, San Joaquin, and Stanislaus rivers, 1986-1989. 1991.
Appendix 13: Preliminary juvenile salmon study: Report on sampling of chinook salmon fry and smolts by fyke net and seine in the lower Tuolumne River 1973-1986. 1991.
Appendix 14: Tuolumne River fluctuation flow study report. 1991.
Appendix 15: Tuolumne River fluctuation flow study plan: Draft. 1992.
Appendix 16: Aquatic invertebrate studies report. 1991.
Appendix 17: Preliminary Tuolumne River water temperature report. 1991.
Appendix 18: Lower Tuolumne River instream temperature model documentation: Description and

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calibration. 1991.

Appendix 19: Modeled effects of La Grange releases on instream temperatures in the lower Tuolumne River. 1991.

Appendix 20: Juvenile salmon pilot temperature observation experiments. 1991.

Appendix 21: Possible effects of high water temperature on migrating chinook salmon (*Oncorhynchus tshawytscha*) smolts in the San Joaquin River. 1991.

Appendix 22: Lower Tuolumne River predation study report. 1992.

Appendix 23: Effects of turbidity on bass predation efficiency. 1991.

Appendix 24: Effects of introduced species of fish in the San Joaquin River system. 1991.

Appendix 26: Export mortality fraction submodel. 1992.

Appendix 27: Tuolumne River summer flow study report 1988-1990. 1991.

Appendix 28: Tuolumne River summer flow invertebrate study. 1991.

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APPENDIX C: OTHER AVAILABLE MERCED RIVER STUDIES

CDWR (California Department of Water Resources). 1994. San Joaquin River tributaries spawning gravel assessment: Stanislaus, Tuolumne, and Merced rivers. Memorandum Report. CDWR, Northern District, Red Bluff.

JSA (Jones and Stokes Associates, Inc.). 1995. Temperature and gravel investigations for fisheries enhancement on the lower Merced River, Merced County, California. Prepared for California Department of Fish and Game, Environmental Services Division, Sacramento.

USFWS (U. S. Fish and Wildlife Service). 1997. Identification of the instream flow requirements for fall-run chinook salmon spawning in the Merced River. USFWS, Instream Flow Assessments Branch, Ecological Services Office, Sacramento, California.

WEST Consultants, Inc. 1995. Sedimentation and fish habitat—Merced River. Draft report. Seattle, Washington.

APPENDIX D.
CURRENT STAKEHOLDER GROUP PARTICIPANTS

NAME	REPRESENTING
Desmond Johnston	Merced County Planning and Community Development Department
Mike Bettencourt	Merced River Riparian Water Users[1]
Rhonda Reed	CDFG, Anadromous Fish Restoration Program
Tom Reta	Self: Merced Falls landowner
Sally Magneson	Self: Landowner adjacent to river
Jennifer Bull	CDFG, Fish Biologist
Harry Dias	MID Advisory Committee; landowners and water users
Art Hardin	Riparian water users in Snelling Area
Jon Kelsey	Self: ranch located in floodplain; riparian water user
Jay Anderson	Self
Bill Brown	Santa Fe Aggregates, Inc; Construction Materials Association of California
Christopher Robinson	Self: landowner, cattle operator, gravel mining operations
Jeani and John Ferrari	Joal Farms, Inc., Josephine Ferrari Ranch LP: Farm adjacent to river
Mike Birmingham	Self: landowner, fisherman, local parks manager, mining and farming interests
Robert Edminster	Self
Lloyd Pereira	Merced River Riparian Water Users
Frank Anderson	Merced River Riparian Water Users; Gallo Vineyards, Inc.
Jim Gaither	The Nature Conservancy
Jim Arsenio	Water users: water rights

[1]This group represents riparian in the 22.5 miles of river from Merced Falls to Shaffer Bridge

APPENDIX D (continued).
PROPOSED AND CONFIRMED TAC PARTICIPANTS

NAME	REPRESENTING	EXPERTISE	CONFIRMED?
Agencies and Local Districts			
Rhonda Reed Jennifer Bull	CDFG	fisheries biology, habitat restoration	Yes
Kevin Faulkenberry	CDWR	hydraulic engineering	No
Scott Spaulding	USFWS	fisheries biology	Yes
Dennis Smith	NMFS	fisheries biology	No
Ted Selb	MID	engineering, water resources	Yes
John Kelsey	East Merced RCD	geology, local RCD infrastructure and practices	Yes
Bob Smith Des Johnson	Merced County Planning and Community Development Department	Planning	Yes
Steve Straud	City of Merced	civil engienering	Yes
To be identified	RWQCB		
To be identified	FERC		
Local Groups			
Frank Anderson Lloyd Pereira Art Hardin	Merced River Riparian Water Users Association	riparian water users issues and practices	Yes
Ken Jensen	Merced River Fly Fisherman's Association	sport fishing issues and interests	Yes
Individuals			
Tom Reta		Agricultural Engineering	Yes
Bob Edminster		Botany	Yes
Bill Brown	Santa Fe Aggregates	aggregate mining issues and practices	Yes
Chris Robinson	Robinson Ranch	aggregate mining and grazing issues and practices	Yes
Jennifer Vick	Stillwater Sciences	ecology/geomorphology	

APPENDIX E.
REQUIRED FORMS AND ATTACHMENTS

STATE OF CALIFORNIA

NONDISCRIMINATION COMPLIANCE STATEMENT

STD. 19 (REV. 3-95) FMC

COMPANY NAME
Stillwater Ecosystem, Watershed & Riverine Sciences

The company named above (hereinafter referred to as "prospective contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 (a-f) and California Code of Regulations, Title 2, Division 4, Chapter 5 in matters relating to reporting requirements and the development, implementation and maintenance of a Nondiscrimination Program. Prospective contractor agrees not to unlawfully discriminate, harass or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, disability (including HIV and AIDS), medical condition (cancer), age, marital status, denial of family and medical care leave and denial of pregnancy disability leave.

CERTIFICATION

I, the official named below, hereby swear that I am duly authorized to legally bind the prospective contractor to the above described certification. I am fully aware that this certification, executed on the date and in the county below, is made under penalty of perjury under the laws of the State of California.

OFFICIAL'S NAME
Christine Champe

DATE EXECUTED	EXECUTED IN THE COUNTY OF
15 April 1999	Alameda

PROSPECTIVE CONTRACTOR'S SIGNATURE

PROSPECTIVE CONTRACTOR'S TITLE
President / CEO

PROSPECTIVE CONTRACTOR'S LEGAL BUSINESS NAME
Stillwater Ecosystem, Watershed, & Riverine Sciences

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I-015543

U.S. Department of the Interior

Certifications Regarding Debarment, Suspension and Other Responsibility Matters, Drug-Free Workplace Requirements and Lobbying

Persons signing this form should refer to the regulations referenced below for complete instructions:

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions - **The prospective primary participant further agrees by submitting this proposal that it will include the clause titled, "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.** See below for language to be used; use this form for certification and sign; or use Department of the Interior Form 1954 (DI-1954). (See Appendix A of Subpart D of 43 CFR Part 12.)

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions - (See Appendix B of Subpart D of 43 CFR Part 12.)

Certification Regarding Drug-Free Workplace Requirements - Alternate I. (Grantees Other Than Individuals) and Alternate II. (Grantees Who are Individuals) - (See Appendix C of Subpart D of 43 CFR Part 12)

Signature on this form provides for compliance with certification requirements under 43 CFR Parts 12 and 18. The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of the Interior determines to award the covered transaction, grant, cooperative agreement or loan.

PART A: Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

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CHECK ✓ IF THIS CERTIFICATION IS FOR A PRIMARY COVERED TRANSACTION AND IS APPLICABLE.

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification, and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

PART B: Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions

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CHECK __ IF THIS CERTIFICATION IS FOR A LOWER TIER COVERED TRANSACTION AND IS APPLICABLE.

(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

DI-2010
March 1995
(This form consolidates DI-1952, DI-1954, DI-1955, DI-1958 and DI-1963)

PART C: Certification Regarding Drug-Free Workplace Requirements

CHECK ✓ IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS NOT AN INDIVIDUAL.

Alternate I. (Grantees Other Than Individuals)

A. The grantee certifies that it will or continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about--
(1) The dangers of drug abuse in the workplace;
(2) The grantee's policy of maintaining a drug-free workplace;
(3) Any available drug counseling, rehabilitation, and employee assistance programs; and
(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --
(1) Abide by the terms of the statement; and
(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the agency in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification numbers(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted --
(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or
(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a) (b), (c), (d), (e) and (f).

B. The grantee may insert in the space provided below the site(s for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

2532 Durant Ave., Suite 201

Berkeley, CA 94704

Check___if there are workplaces on file that are not identified here.

PART D: Certification Regarding Drug-Free Workplace Requirements

CHECK___IF THIS CERTIFICATION IS FOR AN APPLICANT WHO IS AN INDIVIDUAL.

Alternate II. (Grantees Who Are Individuals)

(a) The grantee certifies that, as a condition of the grant, he or she will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant.

(b) If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, he or she will report the conviction, in writing, within 10 calendar days of the conviction, to the grant officer or other designee, unless the Federal agency designates a central point for the receipt of such notices. When notice is made to such a central point, it shall include the identification number(s) of each affected grant

PART E: **Certification Regarding Lobbying**
Certification for Contracts, Grants, Loans, and Cooperative Agreements

CHECK ✓ IF CERTIFICATION IS FOR THE AWARD OF ANY OF THE FOLLOWING AND THE AMOUNT EXCEEDS $100,000: A FEDERAL GRANT OR COOPERATIVE AGREEMENT; SUBCONTRACT, OR SUBGRANT UNDER THE GRANT OR COOPERATIVE AGREEMENT.

CHECK __ IF CERTIFICATION IS FOR THE AWARD OF A FEDERAL LOAN EXCEEDING THE AMOUNT OF $150,000, OR A SUBGRANT OR SUBCONTRACT EXCEEDING $100,000, UNDER THE LOAN.

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

As the authorized certifying official, I hereby certify that the above specified certifications are true.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL Christine Champe

TYPED NAME AND TITLE Christine Champe Principal & Vice-President

DATE 15 April 99

I —015546

I-015546

APPLICATION FOR FEDERAL ASSISTANCE

OMB Approval No. 0348-0043

2. DATE SUBMITTED	Applicant Identifier
16 April 1999	N/A
3. DATE RECEIVED BY STATE	State Application Identifier
4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier

1. TYPE OF SUBMISSION:

Application: ☐ Construction ☒ Non-Construction

Preapplication: ☐ Construction ☐ Non-Construction

5. APPLICANT INFORMATION

Legal Name: Stillwater Ecosystem, Watershed, & Riverine Sciences

Organizational Unit: N/A

Address *(give city, county, State, and zip code)*: 2532 Durant Ave., Suite 201, Berkeley, CA 94704, Alameda County

Name and telephone number of person to be contacted on matters involving this application *(give area code)*: Jennifer Vick (510) 848-8098

6. EMPLOYER IDENTIFICATION NUMBER *(EIN)*: 94-3241861

7. TYPE OF APPLICANT: *(enter appropriate letter in box)* M

A. State — H. Independent School Dist.
B. County — I. State Controlled Institution of Higher Learning
C. Municipal — J. Private University
D. Township — K. Indian Tribe
E. Interstate — L. Individual
F. Intermunicipal — M. Profit Organization
G. Special District — N. Other (Specify) _____

8. TYPE OF APPLICATION:

☒ New ☐ Continuation ☐ Revision

If Revision, enter appropriate letter(s) in box(es) ☐ ☐

A. Increase Award B. Decrease Award C. Increase Duration
D. Decrease Duration Other *(specify)*:

9. NAME OF FEDERAL AGENCY: Bureau of Reclamation, Department of the Interior

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: N/A

TITLE:

11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Merced River Corridor Restoration Project – Phase III: Plan Development and Conceptual Designs

12. AREAS AFFECTED BY PROJECT *(Cities, Counties, States, etc.)*: Merced County

13. PROPOSED PROJECT

Start Date: 7/1/99 — Ending Date: 4/30/02

14. CONGRESSIONAL DISTRICTS OF:

a. Applicant #9 — b. Project #18

15. ESTIMATED FUNDING:

a. Federal	$ 260,351.00
b. Applicant	$ —
c. State	$ —
d. Local	$ —
e. Other	$ —
f. Program Income	$ —
g. TOTAL	$ 260,351.00

16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS? N/A

a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:

DATE _____

b. No. ☐ PROGRAM IS NOT COVERED BY E. O. 12372
☐ OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW

17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?

☐ Yes If "Yes," attach an explanation. ☒ No

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.

a. Type Name of Authorized Representative	b. Title	c. Telephone Number
Christine Champe	Principal & Vice President	(510) 848-8098
d. Signature of Authorized Representative: Christine Champe		e. Date Signed: 15 April 99

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Prescribed by OMB Circular A-102

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I-015547

OMB Approval No. 0348-0044

BUDGET INFORMATION - Non-Construction Programs

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Merced River Corridor Restoration Project - Phase III	—	$ —	$ —	$ 260,351	$ —	$ 260,351
2. —	—	—	—	—	—	—
3. —	—	—	—	—	—	—
4. —	—	—	—	—	—	—
5. Totals	—	$ —	$ —	$ 260,351	$ —	$ 260,351

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Merced	(2)	(3)	(4)	(5)
a. Personnel	$ 45,876	$ —	$ —	$ —	$ 45,876
b. Fringe Benefits	9,998	—	—	—	9,998
c. Travel	4,019	—	—	—	4,019
d. Equipment	—	—	—	—	—
e. Supplies	9,500	—	—	—	9,500
f. Contractual (Subconsultants)	109,298	—	—	—	109,298
g. Construction	—	—	—	—	—
h. Other	—	—	—	—	—
i. Total Direct Charges (sum of 6a-6h)	178,691	—	—	—	178,691
j. Indirect Charges	81,660	—	—	—	81,660
k. TOTALS (sum of 6i and 6j)	$ 260,351	$ —	$ —	$ —	$ 260,351
7. Program Income	$ —	$ —	$ —	$ —	$ —

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8. —	$ —	$ —	$ —	$ —
9. —	—	—	—	—
10. —	—	—	—	—
11. —	—	—	—	—
12. TOTAL (sum of lines 8 - 11)	$ —	$ —	$ —	$ —

SECTION D - FORCASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 83,902	$ 36,312	$ 18,156	$ 25,712	$ 3,722
14. NonFederal	—	—	—	—	—
15. TOTAL (sum of lines 13 and 14)	83,902	36,312	18,156	25,712	3,722

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (Years) (b) First	(c) Second	(d) Third	(e) Fourth
16. —	$ —	$ —	$ —	$ —
17. —	—	—	—	—
18. —	—	—	—	—
19. —	—	—	—	—
20. TOTAL (sum of lines 16-19) —	$ —	$ —	$ —	$ —

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges: —

22. Indirect Charges: Over head and profit are calculated as 1.78 x personnel costs

23. Remarks: —

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Standard Form 424A (Rev. 4-92) Page 2

I — 0 1 5 5 4 9

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ASSURANCES - NON-CONSTRUCTION PROGRAMS

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1 et seq.).

14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.

16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	TITLE
Christine Champe	Principal and Vice President
APPLICANT ORGANIZATION	DATE SUBMITTED
Stillwater Ecosystem, Watershed, & Riverine Sciences	16 April 1999

Standard Form 424B (Rev. 7-97) Back

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